

## ABSTRACT

A polysilicon film evaluation apparatus is provided which enables objective automatic evaluation of the status of a polysilicon film, as formed to a high accuracy in a contact-free fashion. To this end, there is provided a polysilicon film evaluation apparatus 1 including a stage 25 on which to set a substrate W carrying a polysilicon film, an optical system for observation with the visible light 4, 8, 12, 40a for illuminating the visible light on a substrate W on the stage to photograph a surface image of the polysilicon film on the substrate W to effect auto-focusing, an optical system for observation with UV light 6, 10, 40b for illuminating the UV light on the substrate on the stage to acquire a surface image of the polysilicon film of the substrate, auto-focused using the optical system for observation with the visible light, and an evaluating unit 51 for evaluating the linearity and periodicity of a spatial structure of the film surface of the polysilicon film, from a surface image of the polysilicon film obtained by the optical system for observation with UV light, to evaluate the status of the polysilicon film based on the results of evaluation of the linearity and periodicity.